

Remarks

Claims 1-19 were pending and rejected. Reconsideration in view of the remarks below is respectfully requested. The Applicant respectfully notes that although the Examiner stated that “Claims 1, 3-6, and 16-17 are rejected under 35 USC § 103(a)” (*Office Action*, p. 4), the Examiner has not provided any reasons or arguments why the prior art teaches or suggests claim 4. For this reason, as well as the reason discussed regarding claims 10, 14, 15, and 16 herein, Applicant requests that the rejection to claim 4 be withdrawn.

Claim Rejections – 35 USC § 102

The Examiner rejected claims 7-8 and 11-12 under 35 USC 102(b) as being anticipated by *Hsiung* (U.S. Patent No. 4,547,286) (hereinafter *Hsiung*).

Regarding claim 7,

In reviewing the cited portion of *Hsiung*, the Applicant notes that *Hsiung* is directed to a water filtration process (as stated in the title of *Hsiung* which is “Water Filtration Process and Apparatus having Upflow Filter with Buoyant Filter Media and Downflow Filter with Nonbuoyant Filter Media”). *Hsiung* does not appear to be directed to an open channel network (i.e., a network comprising open channels).

In particular, the Applicant respectfully submits that *Hsiung* does not teach or suggest an open channel network as required by the claim. In the *Office Action*, the Examiner states that *Hsiung* discloses first and second flow regulators to allow flow of liquid into and out of “at least one pool of fluid flowing through said open channel network (note in figure 1, there are 3 open tanks connected)” (*Office Action*, p. 2). The Applicant respectfully points out that a tank is not a channel. Similarly, the Applicant points out that three open tanks are not an open channel network. The Examiner has also identified *Hsiung*, col. 7, lines 62-65 as disclosing “open-topped, vertical circular cylinder shown in figures 1 and 8” (*Office Action*, p. 10). The Applicant submits that an open-topped, vertical circular cylinder is not a channel, much less “an open channel network.” Further, the cited portion of *Hsiung* teaches that the circular cylinder is a “vessel 22” (*Hsiung*, col. 7, line 39) and not a channel. Since *Hsiung* does not appear to teach or

suggest “first and second flow regulators to allow flow of liquid into and out of at least one pool of fluid flowing through said open channel network” as required by the claim, the Examiner has not shown that *Hsiung* teaches each and every element of the claim.

The Examiner stated that *Hsiung* teaches “computation means communicating with said flow regulators and said flow sensors to control operation of said flow regulators (column 7 lines 27-40)” (*Office Action*, p. 2). The Applicant respectfully disagrees. The cited portion of *Hsiung* teaches:

a processor 78 is connected between the entrance flow valve 74 and exit flow valve 76 to continuously monitor and compare the rate of inflow and outflow. If the rate of inflow becomes out of balance with the rate of outflow, the processor 78 signals the automatically actuated valve 76 to open or close an appropriate amount to balance the flow. In this manner, the level of water in the vessel 22 is maintained at a substantially constant level, even during cleaning while the bed is expanded.

The Applicant respectfully points out that the processor does not “control operation of said flow regulators” (i.e., both the first and second flow regulators) as required by the claim. Rather *Hsiung* teaches that the processor controls only a single regulator (i.e., the actuated valve 76 to open or close an appropriate amount). Since *Hsiung* does not appear to teach or suggest a computation means to control operation of both flow regulators as required by the claim, the Applicant respectfully submits that *Hsiung* does not teach each and every element of the claim.

For at least these reasons, the Applicant requests that the rejection to claim 7, as well as the rejections to claims that depend upon claim 7, be withdrawn and the claims allowed.

Regarding claim 8,

The Examiner stated that *Hsiung* discloses “further comprising at least one liquid metered delivery means [74] which communicates with said computational means, said computational means [78] subtracting the measured flow through said at least one liquid metered delivery means from the measured flow into said at least one pool (column 7 lines 27-40 and note that for the processor to maintain a constant level, it must subtract the inflow from the total to determine the outflow” (*Office Action*, p. 3). The Applicant disagrees.

The Examiner has stated that *Hsiung* teaches both claims 7 and 8 by citing the same elements performing the exact same process. For example, the Examiner rejected claim 7 stating that *Hsiung* teaches calculating the measured flow into at least one pool through a first of said flow regulators [76] and subtracting the measured flow out of said at least one pool through second of said flow regulators [74]. The Examiner has repeated this rejection for claim 8 citing the same portion of *Hsiung* (col. 7, lines 27-40) teaching the same function performed by the same elements except that flow regulator [74] is now stated to teach “at least one liquid metered delivery means.”

The Applicant respectfully notes that, pursuant to MPEP 2111, “[d]uring patent examination, the pending claims must be ‘given their broadest reasonable interpretation consistent with the specification’.” Here, claim 8 claims the loss detection system of claim 7 “further comprising” something else. If the liquid metered delivery means were the same as the second flow regulator, claim 8 would have no purpose. Since reading claim 8 in such a way as to render the claim redundant is not reasonable, the Applicant respectfully submits that the liquid metered delivery means must be separate from the second flow regulator. Since the Examiner has not shown that *Hsiung* teaches “at least one liquid metered delivery means” much less “said computational means subtracting the measured flow through said at least one liquid metered delivery means from the measured flow into said at least one pool” as required by the claim, the Examiner has not established a case of anticipation.

For at least these reasons, as well as the reasons discussed with regard to claim 7, the Applicant requests that the rejection to claim 8, as well as the rejections to claims that depend upon claim 8, be withdrawn.

Regarding claim 11,

As discussed regarding claim 7, the Applicant respectfully submits that *Hsiung* does not teach or suggest an open channel network, much less fluid flowing through an open channel network, as required by the claim. In the *Office Action*, the Examiner states that *Hsiung* discloses first and second flow regulators to allow flow of liquid into and out of “at least one pool of fluid flowing through said open channel network (note in figure 1, there are 3 open tanks connected)” (*Office Action*, p. 2). The Applicant respectfully points out that a tank is not a

channel. Similarly, the Applicant points out that three open tanks are not an open channel network. The Examiner has also identified *Hsiung*, col. 7, lines 62-65 as disclosing “open-topped, vertical circular cylinder shown in figures 1 and 8” (*Office Action*, p. 10). The Applicant submits that an open-topped, vertical circular cylinder is not a channel, much less “an open channel network.” Further, the cited portion of *Hsiung* teaches that the circular cylinder is a “vessel 22” (*Hsiung*, col. 7, line 39) and not a channel. Since *Hsiung* does not appear to teach or suggest an “open channel network” comprising first and second flow regulators to allow flow of liquid into and out of at least one pool of fluid flowing through said “open channel network” as required by the claim, the Examiner has not shown that *Hsiung* teaches each and every element of the claim.

The Examiner stated that *Hsiung* teaches “computation means communicating with said flow regulators and said flow sensors to control operation of said flow regulators (column 7 lines 27-40)” (*Office Action*, p. 3). The Applicant respectfully disagrees. The cited portion of *Hsiung* teaches:

a processor 78 is connected between the entrance flow valve 74 and exit flow valve 76 to continuously monitor and compare the rate of inflow and outflow. If the rate of inflow becomes out of balance with the rate of outflow, the processor 78 signals the automatically actuated valve 76 to open or close an appropriate amount to balance the flow. In this manner, the level of water in the vessel 22 is maintained at a substantially constant level, even during cleaning while the bed is expanded.

As discussed regarding claim 7, the Applicant respectfully points out that the processor does not “control operation of said flow regulators” (i.e., both the first and second flow regulators) as required by the claim. Rather *Hsiung* teaches that the processor controls only a single regulator. Since *Hsiung* does not appear to teach or suggest a computation means to control operation of both flow regulators as required by the claim, the Applicant respectfully submits that *Hsiung* does not teach each and every element of the claim.

For at least these reasons, as well as the reasons discussed with regard to claim 7, the Applicant requests that the rejection to claim 11, as well as the rejections to claims that depend upon claim 11, be withdrawn and the claims allowed.

Regarding claim 12,

For at least the same reasons discussed with regard to claim 8, as well as the reasons discussed with regard to claims 7 and 11, the Applicant requests that the rejection to claim 12, as well as the rejections to the claims that depend upon claim 12, be withdrawn.

Claim Rejections – 35 USC § 103

The Examiner rejected claims 1-3, 5, 6, and 15-17 under 35 USC 103(a) as being unpatentable over Mastandrea (U.S. Patent No. 4,852,054) (hereinafter *Mastandrea*) in view of *Hsiung*.

Regarding claim 1,

The Examiner has rejected claim 1 stating that *Hsiung* teaches “maintaining a constant level in at least one pool of fluid flowing...in an open channel and monitoring the nett flow into said at least one pool” (*Office Action*, p. 4).

As discussed regarding claim 7, the Applicant respectfully submits that *Hsiung* does not teach or suggest an open channel, much less fluid flowing through an open channel, as required by the claim. In the *Office Action*, the Examiner states that *Hsiung* discloses first and second flow regulators to allow flow of liquid into and out of “at least one pool of fluid flowing through said open channel network (note in figure 1, there are 3 open tanks connected)” (*Office Action*, p. 2). The Applicant respectfully points out that a tank is not a channel. Similarly, the Applicant points out that three open tanks are an open channel. The Examiner has also identified *Hsiung*, col. 7, lines 62-65 as disclosing “open-topped, vertical circular cylinder shown in figures 1 and 8” (*Office Action*, p. 10). The Applicant submits that an open-topped, vertical circular cylinder is not a channel, much less “an open channel.” Further, the cited portion of *Hsiung* teaches that the circular cylinder is a “vessel 22” (*Hsiung*, col. 7, line 39) and not a channel. Since the cited art does not appear to teach or suggest “maintaining a constant level in at least one pool of fluid flowing between two flow regulators in an open channel” as required by the claim, the Examiner has not established a *prima facie* case of obviousness.

The Examiner also rejected claim 1 stating that *Hsiung* discloses “maintaining a constant level in at least one pool of fluid flowing between two flow regulators [74,76]...(column 7, lines 35-38)” (*Office Action*, p. 4). The Applicant respectfully disagrees.

The Applicant respectfully points out that *Hsiung* does not appear to teach “maintaining a constant level in at least one pool of fluid.” Rather, *Hsiung* teaches that the processor 78 continuously monitors and compares the rate of inflow and outflow. If the rate of inflow becomes out of balance with the rate of outflow, the processor 78 signals valve 76 to balance the flow (*Hsiung*, col. 7, lines 32-38). Claim 1, which is a method of loss detection to determine containment losses due to seepage and leakage, requires “maintaining a constant level in at least one pool of fluid.” For example, if the vessel in *Hsiung* sprung a leak, the level within the vessel would diminish. *Hsiung* appears to merely teach that the inflow and outflow at the valves is regulated based on the balance between inflow and outflow. As long as the inflow and outflow are in balance, the system of *Hsiung* is not aware that the level within the vessel may diminish and does not apparently perform any action to maintain a constant level. As such, the Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness.

Further, although the Examiner admitted that neither *Mastandrea* nor *Hsiung* disclose containment losses due to seepage, the Examiner has stated that “to employ the corresponding system and the method of loss detection of the combination of *Mastandrea* and *Hsiung* to determine containment losses due to seepage would have been deemed obvious. The Applicant respectfully points out that both *Mastandrea* and *Hsiung* teach away from the determination of containment losses due to seepage. Seepage is the loss of water through the bed of a channel (see paragraph [0010] of Applicant’s Specification). *Mastandrea* and *Hsiung* do not appear to teach a channel. The systems of *Mastandrea* and *Hsiung* teach tanks (i.e., a filter vessel 22 in *Hsiung* and a buried underground storage tank 30 in *Mastandrea*). Neither *Mastandrea* nor *Hsiung* teach or suggest that liquid may seep through the walls of the vessel or tank. In fact, it appears that both the vessel in FIG. 1 of *Hsiung* and the underground storage tank 30 in FIG. 1 of *Mastandrea* are made of metal. The Applicant is unable to find the terms “seep” or “seepage” anywhere in the cited art. Since neither *Mastandrea* nor *Hsiung* appear to teach or discuss that liquid may seep through the walls of the vessel or the tank, it would not be obvious to calculate

the containment losses due to seepage in either system, separate or combined. The Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness.

For at least these reasons, as well as the reasons discussed with regard to claim 7, the Applicant requests that the rejection to claim 1, as well as the rejections to the claims that depend on claim 1, be withdrawn and the claims allowed.

Regarding claim 2-3,

For at least these reasons discussed with regard to claims 1 and 7, the Applicant requests that the rejections to claims 2 and 3, as well as the rejections to the claims that depend on claims 2 and 3, be withdrawn and the claims allowed.

Regarding claim 5,

For at least these reasons discussed with regard to claims 8 and 12, as well as the reasons discussed with regard to claims 1, and 7, the Applicant requests that the rejection to claim 5, as well as the rejections to the claims that depend on claim 5, be withdrawn and the claims allowed.

Regarding claim 6,

The Applicant respectfully submits that neither *Hsiung* nor *Mastandrea* teach or disclose “wherein said containment losses comprise losses from theft, evaporation, seepage and leakage” much less where “computational means determines theft loss by treating evaporation, seepage and leakage as constants.” As discussed regarding claim 1, the Applicant respectfully points out that both *Mastandrea* and *Hsiung* teach away from the determination of containment losses due to seepage.

Further, the Applicant is unable to find a disclosure in the cited art that teaches or suggests theft loss. In fact, Applicant is unable to find the term “theft” anywhere in *Hsiung* or *Mastandrea*. *Mastandrea* appears to disclose that an evaporation leakage rate if obtained by measuring the liquid level drop in an evaporation tube (*Mastandrea*, col. 22, lines 49-51). Leakage is computed based on a change of volume (*Mastandrea*, col. 22, lines 34-37). However,

if the volume in the underground storage tank in *Mastandrea* was reduced due to theft, the system as disclosed by *Mastandrea* would apparently not be able to distinguish theft from a leak.

Similarly, *Hsiung* compares the input into a vessel by an entrance flow valve to an output of the vessel by an exit flow valve to determine if there is a balance between inflow and outflow (*Hsiung*, col. 7, lines 32-38). If liquid was stolen from the vessel (e.g., half the liquid in the vessel), the system in *Hsiung* would apparently be unaware as long as the balance between the inflow and the outflow was maintained. If, due to theft, the level of the vessel was reduced sufficiently as to impact the balance between the inflow and the outflow, the system in *Hsiung* would apparently adjust the inflow and not detect a theft.

Since the disclosures in the cited art appear unable to detect or determine theft loss, the cited art does not teach or suggest that the “computation means determines theft loss” as required by the claim. As follows, the cited art also does not teach determining theft loss by “treating evaporation, seepage and leakage as constants.” As such, the Examiner has not established a *prima facie* case of obviousness.

For at least these reasons, as well as the reasons discussed with regard to claims 1 and 7, the Applicant requests that the rejection to the claim be withdrawn and the claim allowed.

Regarding claims 15 and 16,

For at least the reasons discussed regarding claims 1, 6, and 7, the Applicant requests that the rejections be withdrawn and the claims allowed.

Regarding claim 17,

For at least the reasons discussed with regard to claim 6, as well as the claims discussed with regard to claims 1 and 7, the Applicant requests that the rejection to the claim be withdrawn and the claim allowed.

Claim Rejections – 35 USC § 103

The Examiner rejected claims 9-10, 13-14, and 19 under 35 USC 103(a) as being unpatentable over in view of *Mastandrea*.

Regarding claims 9, 13, 18, and 19,

As discussed with regard to claim 6, the Applicant respectfully submits that neither *Hsiung* nor *Mastandrea* teach or disclose “wherein said containment losses comprise losses from theft, evaporation, seepage and leakage” much less where “computational means determines theft loss by treating evaporation, seepage and leakage as constants.” As discussed regarding claim 1, the Applicant respectfully points out that both *Mastandrea* and *Hsiung* teach away from the determination of containment losses due to seepage.

Further, the Applicant is unable to find a disclosure in the cited art that teaches or suggests theft loss. In fact, Applicant is unable to find the term “theft” anywhere in *Hsiung* or *Mastandrea*. *Mastandrea* appears to disclose that an evaporation leakage rate if obtained by measuring the liquid level drop in an evaporation tube (*Mastandrea*, col. 22, lines 49-51). Leakage is computed based on a change of volume (*Mastandrea*, col. 22, lines 34-37). However, if the volume in the underground storage tank in *Mastandrea* was reduced due to theft, the system as disclosed by *Mastandrea* would apparently not be able to distinguish theft from a leak.

Similarly, *Hsiung* compares the input into a vessel by an entrance flow valve to an output of the vessel by an exit flow valve to determine if there is a balance between inflow and outflow (*Hsiung*, col. 7, lines 32-38). If liquid was stolen from the vessel (e.g., half the liquid in the vessel), the system in *Hsiung* would apparently be unaware as long as the balance between the inflow and the outflow was maintained. If, due to theft, the level of the vessel was reduced sufficiently as to impact the balance between the inflow and the outflow, the system in *Hsiung* would apparently adjust the inflow and not detect a theft.

Since the disclosures in the cited art appear unable to detect or determine theft loss, the cited art does not teach or suggest that the “computation means determines theft loss” as required by the claim. As follows, the cited art also does not teach determining theft loss by “treating evaporation, seepage and leakage as constants.”

The Examiner has stated that “to take both theft and seepage into consideration of all sources of losses when employing the method of the combination of *Hsiung* and *Mastandrea* to enhance the accuracy of loss would have been convincingly obvious” (*Office Action*, pp. 8-9).

As discussed regarding claims 1 and 6, *Hsiung* and *Mastandrea* teach away from seepage. Further, it is unclear why the system as disclosed in *Mastandrea* (an underground storage tank) should obviously detect theft. Also, it is unclear why the system disclosed in *Hsiung* (a filtration system) should also obviously detect theft. In fact, as discussed above, both the cited art have teachings which indicate that theft would then be ignored unless the balance of inflow to outflow is disturbed (*Hsiung*) or would be accounted as leakage (*Mastandrea*).

The Applicant respectfully submits that “[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” (*In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006) cited with approval in KSR). Further, MPEP 2143.01 states "A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason."

For at least these reasons, as well as the reasons discussed with regard to claims 1, 6, and 7, the Applicant requests that the rejection to claims 9, 13, 18 and 19, as well as the rejections to claims that depend upon claims 9, 13, 18, and 19, be withdrawn.

Regarding claims 10 and 14,

For at least the reasons discussed with regard to claims 9, 13, 18, and 19, as well as the reasons discussed with regard to claims 1, 6, and 7, the Applicant requests that the rejections be withdrawn.

CONCLUSION

It is believed that this reply places the above-identified patent application into condition for allowance. If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below. Please charge any additional required fee or credit any overpayment not otherwise paid or credited to our deposit account No. 50-4561.

Respectfully submitted,

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